

REMARKS

In the non-final Office Action, the Examiner rejects claims 17-21 under 35 U.S.C. § 102(e) as anticipated by MAHESH et al. (U.S. Patent No. 6,891,858); rejects claims 1-16 and 27-40 under 35 U.S.C. § 103(a) as unpatentable over MAHESH et al. in view of LEE et al. (U.S. Patent No. 7,017,176); and rejects claims 22-26 and 41 under 35 U.S.C. § 103(a) as unpatentable over MAHESH et al. in view of MILLET et al. (U.S. Patent No. 7,039,939). Applicant respectfully traverses these rejections.

By way of the present amendment, Applicant amends claim 37 to improve form. No new matter has been added by way of the present amendment. Claims 1-41 are pending.

Rejection under 35 U.S.C. § 102(e) based on MAHESH et al.

Claims 17-21 stand rejected under 35 U.S.C. § 102(e) as allegedly anticipated by MAHESH et al. Applicant respectfully traverses this rejection.

A proper rejection under 35 U.S.C. § 102 requires that a reference teach every aspect of the claimed invention. Any feature not directly taught must be inherently present. See M.P.E.P. § 2131. MAHESH et al. does not disclose or suggest one or more features of Applicant's claims 17-21.

For example, independent claim 17 discloses a method of controlling transmission characteristics of cable modems. The method includes monitoring upstream transmission quality of one or more cable modems; and commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length. MAHESH et al. does not disclose or suggest one or more of these features.

For example, MAHESH et al. does not disclose or suggest commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length. The Examiner relies on Fig. 4; column 2, lines 31-58; and column 4, lines 52-63 of MAHESH et al. as allegedly disclosing this feature of claim 17 (Office Action, pg. 3). Applicant respectfully disagrees with the Examiner's interpretation of MAHESH et al.

Figure 4 of MAHESH et al. depicts a flow chart diagram of a cable modem modulation change procedure. A cable modem first receives a new modulation profile message from a cable modem transaction service, resets the cable modem with the new profile, and causes the cable modem to transmit using the new profile (see, for example, col. 11, lines 15-22). Transmitting using a new profile does not correspond to changing from a first preamble length to a second preamble length. MAHESH et al. discloses that a modulation profile may define a number of parameters, such as modulation type and preamble (column 2, lines 54-59). Although MAHESH et al. discloses that a modulation profile may define a preamble, this section of MAHESH et al. does not disclose or suggest changing from a first preamble length to a second preamble length. Therefore, this section of MAHESH et al. does not disclose or suggest commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length, as recited in claim 17.

At column 2, lines 31-58, MAHESH et al. discloses:

In conventional DOCSIS systems, the CMTS may include a plurality of physically distinct line cards having appropriate hardware for communicating with cable modems in the network. Each line card is typically assigned to a separate DOCSIS domain, which is a collection of downstream and upstream channels for which a single MAC Allocation and Management protocol operates. Typically, each DOCSIS domain includes a single downstream channel and one or more upstream channels. The downstream channel is used by the CMTS to broadcast data to all cable modems (CMs) within that particular

domain. Only the CMTS may transmit data on the downstream. In order to allow the cable modems of a particular DOCSIS domain to transmit data to the CMTS, the cable modems share one or more upstream channels within that domain.

Each upstream and downstream channel of the cable network uses a respective modulation profile which is manually configured at the cable Head End by a cable operator or technician. For example, at start-up or initialization of the CMTS, each upstream channel is configured to use a static or fixed modulation profile for receiving communications from the plurality of cable modems using that particular upstream channel. The modulation profile may define a number or parameters to be used by a cable modem when communicating with the CMTS such as, for example, modulation type (e.g. QPSK or QAM), FEC-t byte value (sometimes referred to as FEC strength), preamble, etc

This section of MAHESH et al. discloses that a modulation profile may define a number of parameters to be used by a cable modem when communicating with a cable modem termination system (CMTS) such as, for example, modulation type and preamble. Although this section of MAHESH et al. discloses that a modulation profile may define a preamble, this section of MAHESH et al. does not disclose or suggest changing from a first preamble length to a second preamble length. Therefore, this section of MAHESH et al. does not disclose or suggest commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length, as recited in claim 17.

At column 4, lines 53-65, MAHESH et al. discloses:

When the Head End detects that the channel conditions on a particular channel have deteriorated, the Head End may automatically and dynamically reconfigure that particular channel to utilize a different modulation profile that is better suited for transmitting data in light of the newly detected channel conditions. Similarly, when the Head End detects that the channel conditions of a particular channel have improved, the Head End may reconfigure the channel to use a different modulation profile which takes advantage of the improved channel conditions, and allows for more rapid transmission of data across that channel.

This section of MAHESH et al. discloses that when the Head End detects that the channel conditions on a particular channel have deteriorated, the Head End may automatically and dynamically reconfigure the particular channel to utilize a different modulation profile that is

better suited for transmitting data. As noted above, MAHESH et al. discloses that a modulation profile may define a number of parameters, such a modulation type and preamble (column 2, lines 54-59). Although MAHESH et al. discloses that a modulation profile may define a preamble, this section of MAHESH et al. does not disclose or suggest changing from a first preamble length to a second preamble length. Therefore, utilizing a different modulation profile does not correspond to changing from a first preamble length to a second preamble length. Therefore, this section of MAHESH et al. does not disclose or suggest commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length, as recited in claim 17.

In response to similar arguments made in a previous response, the Examiner states that “the preamble length is **variable** and is used for synchronizing accurately the burst receiver phase-lock-loop (PLL) circuitry with the received data...Therefore, the claim requirement of *commanding at least one of the one or more cable modems to change its transmission characteristics...including changing from a first preamble length to a second preamble length* is deemed inherent to the teachings of Mahesh. Without this requirement, which is the requirement of DOCSIS, Mahesh’s devices (CMs and CMTSs) cannot effectively communicate with each other and cannot operate with other CMs and CMTSs currently in operation, which follow the DOCSIS standard” (Office Action, pg. 3). Applicant submits that MAHESH et al. does not disclose the above feature of claim 17.

As noted above, MAHESH et al. discloses that the Head End may automatically and dynamically reconfigure the particular channel to utilize a different modulation profile that is better suited for transmitting data and that a modulation profile may define a number of

parameters, such a modulation type and preamble. Even assuming, for the sake of argument, that the preamble length is variable, as alleged by the Examiner, MAHESH et al. does not disclose or suggest changing from a first preamble length to a second preamble length based on a monitored quality. MAHESH et al. does not disclose that the different modulation profile has a different preamble length. Rather, MAHESH et al. merely discloses utilizing a different modulation profile and that the modulation profile may define modulation type and preamble. Therefore, MAHESH et al. does not disclose or suggest commanding at least one of the one or more cable modems to change its transmission characteristics based on the monitored quality, including changing from a first preamble length to a second different preamble length, as recited in claim 17.

For at least the foregoing reasons, Applicants submit that claim 17 is not anticipated by MAHESH et al.

Claims 18-21 depend from claim 17. Therefore, these claims are not anticipated by MAHESH et al. for at least the reasons given above with respect to claim 17.

Rejection under 35 U.S.C. § 103(a) based on MAHESH et al. and LEE et al.

Claims 1-16 and 27-40 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over MAHESH et al. in view of LEE et al. Applicant respectfully traverses this rejection.

Independent claim 1 recites a method of altering modem transmission characteristics, including setting a modem to transmit on a first upstream channel on a first frequency using first transmission characteristics; monitoring a quality of upstream transmissions from the modem on the first upstream channel; and setting the modem to transmit on a second different upstream channel on a second different frequency using second transmission characteristics based on the

monitored quality. MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, do not disclose or suggest the above combination of features.

For example, MAHESH et al. and LEE et al. do not disclose or suggest setting a modem to transmit on a second different upstream channel on a second different frequency using second transmission characteristics based on a monitored quality, as recited in claim 1. The Examiner admits that MAHESH et al. does not disclose this feature and relies on column 4, lines 39-53 and column 6, lines 40-44 of LEE et al. as allegedly disclosing this feature of claim 1 (final Office Action, pg. 6). Applicant respectfully disagrees with the Examiner's interpretation of LEE et al.

At column 4, lines 39-53, LEE et al. discloses:

Accordingly, the present invention provides an apparatus and method for transmitting upstream data over two or more upstream channels. In one embodiment, a cable modem is disclosed. In general terms, a first upstream channel is obtained by the cable modem from the head end. The cable modem is configured to transmit data over the first upstream channel. A second upstream channel is then obtained from the head end. If the second upstream channel differs from the first upstream channel, the cable modem is configured to transmit data over the second upstream channel, as well as the first upstream channel. If the obtained second upstream channel does not vary from the first upstream channel, a next upstream channel is obtained until it varies from the first upstream channel or there are no available upstream channels.

This section of LEE et al. discloses that a cable modem transmits data over first and second upstream channels, where the second upstream channel differs from the first upstream channel. LEE et al. does not disclose that the cable modem transmits on the second upstream channel on a second different frequency. In fact, LEE et al. discloses that the upstream signal is from a single modem may exit the modem on one line that is split by a splitter into two lines having two upstream channels (column 7, lines 42-44). Therefore, LEE et al. discloses simultaneously transmitting on the multiple upstream channels. Furthermore, LEE et al. does not disclose or suggest that the cable modem transmits on the second upstream channel is based on a monitored quality. Therefore, LEE et al. does not disclose or suggest setting a modem to transmit on a

second different upstream channel on a second different frequency using second transmission characteristics based on a monitored quality, as recited in claim 1.

At column 6, lines 40-44, LEE et al. discloses:

Additionally, if one of the multiple upstream channels of a cable modem becomes unable to transmit data, another upstream channel may take over transmission. Thus, the present invention may increase the reliability of data transmission.

This section of LEE et al. discloses that if one multiple upstream channel of a cable modem becomes unable to transmit data, another upstream channel may take over transmission. This section of LEE et al. does not disclose or suggest transmitting on the other upstream channel on a different frequency. Therefore, this section of LEE et al. does not disclose or suggest that the cable modem transmits on the second upstream channel is based on a monitored quality. Therefore, LEE et al. does not disclose or suggest setting a modem to transmit on a second different upstream channel on a second different frequency using second transmission characteristics based on a monitored quality, as recited in claim 1.

For at least the foregoing reasons, Applicant submits that claim 1 is patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination.

Claims 2-8 depend from claim 1. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 1.

Claims 9, 27, 30, 33 and amended claim 37 recite features similar to, yet possibly of different scope than, features recited above with respect to claim 1. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least reasons similar to the reasons given above with respect to claim 1.

Claims 10-16 depend from claim 9. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 27.

Claims 28 and 29 depend from claim 27. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 30.

Claims 31 and 32 depend from claim 30. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 9.

Claims 34-36 depend from claim 33. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 33.

Claims 38-40 depend from claim 37. Therefore, these claims are patentable over MAHESH et al. and LEE et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 37.

Rejection under 35 U.S.C. § 103(a) based on MAHESH et al. and MILLET et al.

Claims 22-26 and 41 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over MAHESH et al. in view of MILLET et al. Applicant respectfully traverses this rejection.

Independent claim 22 discloses a cable modem termination system that includes a memory to store instructions, and a processor to execute the instructions in the memory to monitor upstream transmission quality of one or more cable modems, and instruct at least one of the one or more cable modems to change its transmission characteristics, including changing from a first time division multiplexed timeslot size to a second different time division

multiplexed timeslot size, when the monitored quality meets a specified criteria. MAHESH et al. and MILLET et al., whether taken alone or in any reasonable combination, do not disclose or suggest this combination of features.

For example, MAHESH et al. and MILLET et al. do not disclose or suggest a processor to execute the instructions in the memory to instruct at least one of the one or more cable modems to change its transmission characteristics, including changing from a first time division multiplexed timeslot size to a second different time division multiplexed timeslot size, when the monitored quality meets a specified criteria, as recited in claim 22. The Examiner admits that MAHESH et al. does not disclose this feature and relies on column 11, line 17 – column 12, line 35 of MILLET et al. as allegedly disclosing this feature of claim 22 (final Office Action, pg. 14). Applicant respectfully disagrees with the Examiner's interpretation of MILLET et al.

At column 11, line 17 – column 12, line 35, MILLET et al. discloses that an upstream signal quality is compared to a threshold signal quality level. If the signal quality of the upstream band being used by the selected modem is less than the threshold, the MAC layer assigns another time slot to the selected modem. If the signal quality is above the threshold level, it is considered an acceptable upstream band. Assigning another time slot does not correspond to changing from a first time division multiplexed timeslot size to a second time division multiplexed timeslot size. MILLET et al. does not disclose that the other time slot is of a different size than the first time slot. Therefore, this section of MILLET et al. does not disclose or suggest a processor to execute the instructions in the memory to instruct at least one of the one or more cable modems to change its transmission characteristics, including changing from a first time division multiplexed timeslot size to a second different time division multiplexed timeslot size, when the monitored quality meets a specified criteria, as recited in claim 22.

For at least the foregoing reason, Applicant submits that claim 22 is patentable over MAHESH et al. and MILLET et al., whether taken alone or in any reasonable combination.

Claims 23-26 depend from claim 22. Therefore, these claims are patentable over MAHESH et al. and MILLET et al., whether taken alone or in any reasonable combination, for at least the reasons given above with respect to claim 22.

Independent claim 41 recites features similar to, yet possibly of different scope than, features recited above with regard to claim 22. Therefore, claim 41 is patentable over MAHESH et al. and MILLET et al. for at least reasons similar to the reasons given above with respect to claim 22.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's reconsideration of the application and the timely allowance of the pending claims. If the Examiner does not believe that all pending claims are now in condition for allowance, the Examiner is urged to contact the undersigned to expedite prosecution of this application.

As Applicant's remarks with respect to the Examiner's rejections overcome the rejections, Applicant's silence as to certain assertions by the Examiner in the Office Action or certain requirements that may be applicable to such rejections (e.g., whether a reference constitutes prior art, reasons to modify a reference and/or combine references, assertions as to dependent claims, etc.) is not a concession by Applicant that such assertions are accurate or that such requirements have been met, and Applicant reserves the right to dispute these assertions/requirements in the future.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1070 and please credit any excess fees to such deposit account.

Respectfully submitted,

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